Sustainable Pathways for Canada’s Onroad Transportation Sector

Workshop summary

June 12th, 2019
Workshop overview

- Primary objective: bring together a diverse set of stakeholders to discuss the forces impacting Canada’s passenger and commercial vehicle industries and the policies and programs that are necessary to transition to a more environmentally and economically sustainable transportation sector.
Session 1

Global, national, and local trends affecting the Canadian auto industry
2 key trends in the automotive sector

U.S. is rolling back passenger vehicle efficiency standards, and manufacturers are getting more than they bargained for…

Automakers Tell Trump His Pollution Rules Could Mean ‘Untenable’ Instability and Lower Profits


On ZEVs, globally, manufacturer projections exceed what is required by regulation

Based on company announcements for plug-in vehicles
Drew Kodjak, ICCT
Global trends in vehicle technology and policy

- Canada’s limited EV production puts its auto industry at risk in a global EV transition
- Compared to 2.3% global EV share, Canada’s lags with 0.4% of auto production being electric
  - Canada’s EV production is from ~9,000 Chrysler Pacifica plug-in hybrids produced in 2018
  - Other major auto producing countries (S. Korea, UK, France) are keeping pace
  - Other non-major auto producing countries (Netherlands, Sweden) are becoming leaders

Sources: EV-Volumes [http://www.ev-volumes.com/datacenter/]; International Organization of Motor Vehicle Manufacturers; ICCT [https://www.theicct.org/publications/global-electric-vehicle-industry]; Larger manufacturing companies not shown: China, U.S., Germany, Japan
‘Boom’ cycle in auto industry that has been going since the end of the recession of 2008/9 is expected to end → production and sales decrease across North America in the coming years

- OEMs will say that they cannot invest during a downturn, and that’s just not true

- Most efficient / competitive vehicles built in Canada are by Toyota and Honda, and yet it’s the Big 3 – GM, Ford, FCA – that hold political sway
Alan Baum, Baum & Associates
Canadian vehicle production trends

In December 2018 Pollara conducted a survey of approximately 2,200 Canadians about attitudes towards vehicles and GHG emissions standards. A large majority (69%) are either unaware or vaguely aware of Canada’s vehicle GHG emission standards. Two-thirds (65%) of Canadians support the current vehicle emission standards – just 15% oppose. For messaging to the general public, make the issue personal (e.g., pocket book issue). Long-term cost savings are the most effective sales frame, followed by health benefits.
## Public perspectives on vehicle efficiency regs

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<th>AB (n=207)</th>
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<tr>
<td><strong>Maintain</strong> the current regulations, with emission standards becoming more strict over time</td>
<td>36%</td>
<td>39%</td>
<td>37%</td>
<td>42%</td>
<td>43%</td>
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<td><strong>Strengthen</strong> the current regulations, with emission standards becoming even stricter</td>
<td>27%</td>
<td>23%</td>
<td>19%</td>
<td>18%</td>
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<td><strong>Freeze</strong> vehicle emission standards at model year 2020 levels</td>
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<td>17%</td>
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Framing the automated vehicle landscape

- Focus on ‘butterfly effects’ as opposed to ‘moon shoots’
- Smaller or targeted measures that can have positive domino effects
- Need to see much more AV investment in transit modes and social use cases
- In mobility choices, we have to remember that people tend to always act on what’s most convenient
- Regarding policy, it’s not the tools you have but how you use them

MaRS recommendations for automated vehicles

1. Make road safety king
2. Think beyond driveless cars
3. Elevate social use cases and efficient transportation modes
4. Design streets with all types of mobility in mind
5. Prioritize public, active, and shared mobility
6. Optimize technical data
7. Protect personal information
8. Use clean energy
9. Activate a shared vision for the long game and strong leadership to drive immediate action

Session 2  
Overcoming barriers to cleaner cars in Canada
What ZEV policies are “best” for Canada

- Using innovative methodology that includes consumer interviews, surveys, and modeling, Prof. Axsen found that current policies do not get ZEVs beyond 10% of new vehicles sold in 2030, while adding a durable fiscal incentive or a ZEV mandate can achieve 30 – 40% by 2030.

- Even after EV cost parity is achieved, policies are still needed to continue to drive consumer acceptance.

- Performance standards are far more popular than a carbon tax (see following slide).
What ZEV policies are "best" for Canada

Canada-wide policy support (2019, n = 1552)

Demand-focused:
- Carbon tax ($150/tonne)
- ZEV subsidy ($6k 10 yrs.)
- HOV lane access for EVs
- Chargers (50% gas)
- EV-ready building codes
- ZEV Info campaigns

Supply-focused:
- CAFE (60% cut by 2040)
- LCFS (80% cut by 2050)
- ZEV mandate (100% by 2040)

Percentage of respondents (n=1,552)
In 2015, Quebec implemented its Electrification of Transport Plan (2015-2020)

Quebec has abundant, inexpensive, and clean (99% renewable) electricity, including a projected 41 TWh surplus between 2019 and 2026

Promoting EVs makes great sense for Quebec, both environmentally and economically

ZEV regulation came into force in Jan. 2018

Quebec’s action plan for 2020-2025 is under development
Key results

- **44,434** electric vehicles on the road on April 30\(^{th}\) 2019
- First electric vehicles sales rank in Canada
- **4,060** public charging stations on December 31st 2018, including **369** fast chargers
- Most important charging stations network in Canada, *Electric Circuit (Hydro-Québec)*
In May 2019, BC passed its Zero Emission Vehicle Act

- ZEV Act sets sales requirements for new PVs
  - 10% in 2025
  - 30% in 2030
  - 100% in 2040 (no ICEV sales permitted past 1/1/2040)

- BC is the first jurisdiction in the world with legislation calling for 100% ZEV sales with enforceable penalties

- 2019 budget has allocated $100 million to BC’s “market transformation approach”

- In a public opinion poll, ZEVs captured the highest interest of all measures considered

Christina Ianniciello, Govt. of BC
Accelerating zero emission transportation

How the BC market is evolving

- ZEVs over 6% of LDV sales in first quarter of 2019 (over 15% in May)
- Over 20,000 ZEVs in BC
- Over double the public charging infrastructure compared with 2015
- Network of 6 public hydrogen fuelling stations by 2020
- Since May 1, doubling of uptake in incentive program
- Over 40 ZEV models available
- Moving along the market transformation curve from “innovators” to larger segment of “early adopters/early majority”
In March 2019, Canada announced national ZEV sales targets for PVs:
- 10% in 2025
- 30% in 2030
- 100% in 2040

iZEV program: $300M point-of-sale incentive that provides up to $5K per eligible ZEV

$265M to support adoption by businesses by allowing a full tax write-off for eligible ZEVs

Securing agreements with individual automakers to ensure that supply meets demand across Canada

$130M over five years to deploy network of charging stations (level 2 and higher)
Joe Homsy, Transport Canada
Federal ZEV policies

Q1 2019 Registrations

Key Points

- Increasing lopsidedness of ZEV market in Canada
- British Columbia and Quebec represented 80% of ZEV sales in Q1, but only 34% of total LDV sales
- Whether federal measures can help realign ZEV and LDV markets over time may be basis for assessing success
Lunch keynote
Future of the Canadian auto industry
John Holmes, Queens University
Future of the Canadian auto industry

- Auto sector in Canada
  - 126,000 direct jobs
  - $9.6B in wages
  - $18.2B in GDP
  - $86.5B in exports
  - Driver of technological innovation

- Supplier base critical to Canada
  - 700+ companies
  - Canadian-owned global suppliers
  - Subsidiaries of Japanese, US, European global suppliers
  - World-class tooling industry

- Preferential access to US market remains critical

- Fortunes of Canadian (Ontario) auto industry tied to resilience of auto R&D and manufacturing in the Great Lakes Region
“Innovation must become THE pathway to automotive industry growth in Canada ….. In this period of rapid industry transformation and adoption of new technologies, Canada needs to now invent products others will manufacture – not just manufacture products others have invented.”

CAPC Submission on a Canada Innovation Strategy, August 31, 2016
Session 3
Opportunities for growing Canada’s zero emission vehicle industry
Al Cormier, Electric Mobility Canada
Growing the Canadian EV industry

- Global electrification trend presents business opportunities that Canada can embrace
- Canadian companies in various types of EV design and production
  - Large transit buses
  - School buses
  - Heavy duty mining vehicles
  - Battery design and fuel cell design
  - Onboard system integration
  - Off-road vehicles, trains
  - Vehicle parts and components using advanced composites
  - Advanced power conversion devices
  - Communications software and controls
  - Manufacturing processes
  - Non-propulsion auto parts for EVs
Al Cormier, Electric Mobility Canada
Growing the Canadian EV industry

Canadian competitive advantages

- Heavy duty and large EV powertrain systems and integration
- Prototyping and testing
- Software and controls
- Cold climate component and vehicle testing
- Light-weighting materials
- Manufacturing cost reduction processes
- Fuel Cell systems
In policy negotiations, govt. and industry are always part of the discussion, but we must bring workers to the table as well.

Workers recognize the need to address climate impacts but they are also looking for certainty and plans that will help them to continue to work and support themselves and their families.

Just Transition is needed for workers in the auto sector.

Getting out and actually listening to workers is very important.
Autoworkers on ZEVs

- It is important to identify the opportunity and value of attracting EV manufacturing to Canada – we build Mini Vans, SUVs, Cars in Ontario. The Hybrid Pacifica built in Windsor is the only EV built in Canada. Even in that case the vehicle propulsion/battery manufacturing is done outside Canada.
- The biggest challenge is that the decisions made by auto manufacturers are made outside of the Canadian border.
- How do we encourage ZEV manufacturing in Canada? Can we build government and consumer support for ZEVs to encourage manufacturing?
Suzy Goldberg, ChargePoint
Reducing costs with fleet electrification

Charging Management Case Study

+ **Vehicles**
  - 45 Chevy Volts (plug-in hybrid)
  - Use case: City Motorpool
  - Dwell time: 12 hours
  - Each with L2 charger

+ **Utility Rates**
  - Demand: $7.50 per kW per month
  - Energy:
    - Off-peak: $0.05 per kWh
    - Peak: $0.065 per kWh

+ **Un-mitigated Demand Charges**
  - 45 Volts: ~300kW = $26,700 per year
  - 1 Volt: 6.6kW = ~$600 per year

Management:
- Scheduled Charging
- Sharing power on-site
Suzy Goldberg, ChargePoint
Reducing costs with fleet electrification

Capital Savings with Charger Management

- **Over 60% CapEx Savings**
- Significant cost reduction in:
  - Electrical Panels
  - Conduit and Wiring
  - Transformer

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**ANNUAL FUEL SAVINGS PER VEHICLE**

- **57% Fuel Savings**
- Utilize utility off-peak energy rates
- Significant demand charge reduction

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Session 3 Q&A and discussion
Annie Berube, Equiterre
Closing thoughts

- Canada has big opportunity to step into the environmental leadership void left by the U.S.
- At the federal, provincial, and local levels, Canada is making good progress on implementing ZEV-supportive policies, but much more can and should be done across the board.
- To achieve goal of fully transition to ZEVs by mid-century, it will take sustained commitment from government, industry, the environmental community, and the general public.
And, last but certainly not least…

…CONGRATULATIONS RAPTORS!!!

Just one day after our workshop, the Raptors beat the Warriors to secure Canada’s first NBA championship! Coincidence?…we think not.